Azara, Levaillant, and a host of others, who established many very excellent genera, but have necessarily lost the credit of their discoveries owing to their having neglected to employ for the designation of them the one language recognized by the world of science.

There are one or two other points in which we think the principles adopted by Mr. Gray in the present edition of his List do not work well. In the preface it is stated that the synonymy commences with the edition of Linnæus's 'Systema Naturæ' published in 1735. Now Linnæus had not at that time invented his binominal system, and it is therefore neither correct nor necessary to commence our present nomenclature from so early a period. The question, what edition of the 'Systema Naturæ' we ought to begin with, has been already discussed in a previous review of a former edition of Mr. Gray's book in this Magazine *, and Mr. Gray has himself acknowledged, in the preface to his List of 1844, that the '*invaluable principle*' of the binominal system was not established before 1758; but in his present work he always begins by quoting the edition of 1735, and seems even to give that and the other earlier editions an occasional preference over the subsequent and more perfect publications. At the same time he takes it for granted, that the first species on the list of each of these editions was intended to be the type of the genus,—a point which appears to admit of much argument. The adoption of these principles in the present edition has caused some rather important changes in the types and names of certain well-known genera; changes in zoological nomenclature, where the maxim '*quieta non movere*' ought to carry more than ordinary weight, and in which, we think, other naturalists will be rather loth to follow. For example, *Alca* is now referred to the Puffins (*A. arctica*) instead of the Great Auk, and *Chenalopex*! (a term always hitherto appropriated to the *Anas ægyptiaca*) is proposed to be used for the *Alca impennis*, as having been so applied by Moehring in 1752! The type of the genus *Tanagra* is altered, because the *T. episcopus* (always hitherto considered as such) does not stand first in Linnæus's list. Now the very fact that Linnæus placed first one and then another species at the head of his genera seems conclusive against the *necessity* of invariably adopting the first species as the type. Indeed Mr. Gray has not ventured to carry out these rules throughout to their legitimate result. Had that been done, he must have used *Strix* for the Horned Owls (*Bubo*), and *Falco* for the Eagles (*Aquila*), and besides that have introduced a variety of other equally objectionable changes.

Again, although it cannot be questioned that the *same name* ought not to be used in zoology for two different animals, and there are also strong reasons for an alteration when names even *closely resemble* one another, Mr. Gray's changes on these grounds occasionally go beyond what seems absolutely necessary. *Harpactes* certainly ought not to be liable to be mistaken for *Arpactus*, or *Lophūra* for *Lophŷrus*, and we hope therefore Mr. Gray will not be imitated in

* See Mr. Strickland's article in the 'Annals and Magazine' for 1851.

his rejection of these names in favour of *Hapalurus* and *Macartneya*, or in other similar changes.

We also regret that Mr. Gray has not thought fit to adopt the very simple rule given in the British Association Committee's Report for the formation of the names of the families and subfamilies in *idæ* and *inæ*, and from which a very desirable uniformity would have ensued. As it is, we have *Steatorninæ* instead of *Steatornithinæ*, *Podagirinæ* instead of *Podagrinæ*, *Coraciadæ* instead of *Coraciidæ*, *Arainæ* (!) instead of *Arinæ*, and so on.

A catalogue of the unabbreviated names of the authors of the different genera, and of the chief works in which they have published them, would have been a very useful addition to Mr. Gray's List, though one which would have doubtless involved a certain amount of extra labour; for even the professed ornithologist will be puzzled to find the place where some of the names given in the List were first promulgated. The fact is that certain authors are in the habit of publishing names used by other persons only in MS., or for the labels of Museum specimens, and which cannot therefore be recognized previously to such publication. For example, Dr. Schiff of Frankfort-am-Main, to whom several genera among the *Piprinæ* and elsewhere are attributed, has, we believe, never *published* anything on the subject of ornithology. Prince Bonaparte has, however, introduced Dr. Schiff's MS. names into some of his recent lists of genera, and they have consequently been included in Mr. Gray's Catalogue. It would have been better had Mr. Gray in this and similar cases given the name of the *publisher* of the genus as well as that of the supposed originator.

Lest the foregoing remarks should be thought to be rather in blame than in praise of Mr. Gray's book, it is right to conclude by repeating the commendation bestowed upon it at the beginning of our notice. We regard it as a most valuable contribution to natural history, and quite indispensable as a work of reference to the student of scientific ornithology. Mr. Gray deserves the warmest thanks of all naturalists for the great labour he has bestowed upon the collection of such a vast mass of materials from so many different sources, and for the care with which he has reduced them into arrangement. We may also repeat our hope that his book will not only be a useful guide through the perplexing mazes of ornithological synonymy, but also have some effect in checking those naturalists, who, instead of following Mr. Gray's example and endeavouring to assist others in clearing the way, are rather increasing difficulties by useless additions to the already enormous catalogue of Bird-genera.

Descriptive and Illustrated Catalogue of the Histological Series contained in the Museum of the Royal College of Surgeons. Prepared for the Microscope. Vol. ii. London. 1855. 4to.

The previous volume of this valuable work was devoted to the structure of the harder tissues of plants and invertebrate animals;

the present one contains illustrations of the minute structure of the skeleton of the vertebrate animals as developed by the microscope, and is a catalogue of that not less valuable portion of the College collection belonging to histology. The present volume bears the similar impress of care and research as the former one, and like it, if we may judge from the greater importance of the subject-matters, will share the same complimentary fate, of being speedily out of print. It is however to be hoped, that the Council of the College, under whose auspices these volumes are prepared, will issue a new edition, to which, we doubt not, Prof. Quekett can furnish many important additions in vegetable and invertebrate structures, and which would supply a desideratum to many investigators, who have not had the good fortune to procure the first volume of the series. In speaking of this work, it will be unnecessary, as well as useless, to enlarge upon the value and importance of microscopical research. The microscope has not only ceased merely to gratify our curiosity or excite our wonder, but has become a source of high intellectual amusement and of great practical value.

"Time was," says Prof. Owen in the recently published Lectures on the Invertebrata, "and not many years ago, in this country, when that term, Microscopical Anatomy, was almost regarded as synonymous with the anatomy of the imagination; but the numerous and highly important discoveries which have been made and confirmed by observers in almost every European state, by means of the greatly improved microscopes at their command, have placed the value, the indispensability, of that instrument to the anatomist, beyond the necessity of vindication."

This remark of the Hunterian Professor is not only corroborated, but strengthened, in the publication of the volume before us, by his colleague, Prof. Quekett. In a general notice, the value of this work may be stated under two principal heads,—firstly, that of presenting us with a series of terms of comparison of the differences which obtain in the minute structure of the endo- and exo-skeleton of the four classes of the vertebrate type; and, secondly, in furnishing us with numerous and accurate illustrations of the more important genera and species in all those classes of Vertebrata.

Independently of the comparative value to the anatomist of the variations existing in the minute structure of bone, or the tissues or the dermal covering of different parts of the same animal; the differences in the minute structure of the skeleton in the four classes become more interesting when such are known to exist. That these differences can be fully shown, it is only necessary to consult the admirable plates appended to this volume, drawn as they have been by an experienced artist, from the microscope, by means of the camera lucida. To those who, like the geologist, have always to appeal to the comparative anatomist for the determination of the remains of the fossil vertebrata, any further aid, especially when a minute portion is concerned, as to the class-affinity of the fragment, becomes of extreme value; and this the microscope fortunately yields us. Those who remember the animated discussions respecting the

mammalian affinities of the Stonesfield remains, of the Pterodactyles of the chalk, or the Birds' bones of the Wealden strata, will feel the force of the above remark. And now, when every year bids fair to unveil to us new, or hitherto unlooked-for, forms amidst the earlier, or even earliest, scenes of the earth's physical history; and the old coast-line or ancient estuary yields traces of footsteps belonging to some unknown beast, perhaps seeking shelter from the storm (its impress still remaining), or tracing its way on the rippled sands left moist by the receding tide—footsteps so numerous as to lead us to infer some corresponding solid skeleton; a fragment of bone might guide us along the path of discovery, as to its nature.

Prof. Quekett has, as is well known, been already engaged on some of these points of original investigation. In inquiries of such-like character, this volume would be an indispensable requisite, containing as it does a description of 945 preparations, of which 385 belong to the skeleton of Fishes, 103 to that of Reptiles, 60 to that of Birds, and the remaining 397 to that of Mammalia. Of the most important and striking specimens of these preparations, 432 have been selected for representation, all of which, with but two exceptions, were drawn by means of the camera lucida. And with a view of rendering the work more useful to the student, in comparing the minute structure of the bones of the four great classes of animals, the greater part of the sections have been drawn under two powers, one of 95, the other of 440 diameters, it having been ascertained that the size and arrangement of the lacunæ are frequently of the greatest importance in determining the true nature of fragments of recent and fossil bone, when other characters are wanting. The numerous preparations above noticed consist of sections of the tissue of the endo-, exo-, and splanchno-skeletons of Fishes; the endo- and splanchno-skeletons of Birds; and the endo-skeleton of Reptiles and Mammals; the term splanchno or visceral skeleton being applied to the hard bony tissue found in certain viscera and organs of sense, as in the heart of the Hog and most old Ruminants, and the eyes of Fishes and Birds. A short introduction is given, in which the principal structures of bone are enumerated and described, as the Haversian canals and interspaces, the laminæ, lacunæ, canaliculi, &c. The body of the work is chiefly occupied by elaborate descriptions of the figures; a few notes, however, explanatory of the principal points of interest, precede each division.

In describing the bone of Mammalia the minute structure is stated to be nearly uniform throughout the whole class, each Haversian system being surrounded by a series of concentric laminæ with lacunæ placed between them, and giving off numerous canaliculi in a radiating manner. It is a remarkable fact, however, that those Mammalia which resemble Birds in their habits or internal anatomy, approach most nearly to these animals in the minute structure of their bones; such is the case in the Ornithorhynchus, Echidna, Sloth, Kangaroo and Bat.

Copious details are given of that singular animal, the Lepidosiren, forming the connecting link between Fishes and Reptiles. Fourteen

preparations are here described, which, together with four others published in the previous volume, afford us an intimate knowledge of the minute structure of the endo-skeleton of this interesting form. Prof. Quekett states that the structure of its bone, as well as those portions of its skeleton which do not become ossified, are more closely allied to the corresponding tissues of the Batrachia than to those of any Fish yet examined; and as it undoubtedly possesses many characters peculiar to Fishes, a subdivision of the order Batrachia has been proposed for it, and that of Ichthyo-Batrachia appears to be most expressive of its peculiar affinities.

To the anatomist, palæontologist, and geologist engaged in microscopical research, this volume is of inestimable value, superseding as it does the necessity of obtaining a costly series of objects for examination and comparison. Few persons could have undertaken the preparation of a work requiring so much labour and nice manipulation of the numerous specimens illustrative of the various subjects, with any fair chance of equivalent remuneration. By the publication of this Catalogue, the Council of the College have afforded a boon to microscopical science, prepared as it has been by an author who has devoted so much time to, and prosecuted with such zeal and success, the practical bearings of histology.

PROCEEDINGS OF LEARNED SOCIETIES.

ZOOLOGICAL SOCIETY.

July 25, 1854.—John Gould, Esq., F.R.S., in the Chair.

Notes on the Habits of some Indian Birds.—Part V. By Lieut. Burgess.

Family Sturnidæ.

Subfamily Sturninæ.

Genus Pastor.

Pastor Roseus, Temm. The Rose-coloured Pastor.

This bird visits the Deccan in immense flocks to feed on the grain called *jowaree* which begins to ripen in the month of November, and is cut about March. The arrival of these birds is uncertain, in some years being earlier, in others later. On referring to notes made at the time, I find that in the year 1848 the first Rose-coloured Pastor was seen on the 28th of November, and the last on the 5th of April 1849. The first which I observed in the autumn of that year, was on the 16th of November. In the year 1850, I saw a large flock as early as the 24th of August; I transcribe the note: "August 24, 1850. Saw a large flock of the Rose-coloured Starlings with their broods to-day feeding in an open field, evidently on insects, as they were constantly in chase of them, flying." I never saw this bird so arly as it was that year, and they arrived long before the jowaree was ripe. This grain when ripe, and before it is ripe, is their staple

food. After it is cut and housed, I have observed them busily feeding on the flowers of the leafless Caper, a shrub very common in many parts of the Deccan, especially on the banks of the larger rivers. I have made many, but hitherto ineffectual attempts, to ascertain where these birds breed; that they do breed somewhere on the continent of India, there can be no doubt, as the young birds which I saw on the 24th of August 1850, were in brown plumage, and appeared as if they had not long left the nest. I was informed by a clever and well-informed Mharatta, who seemed to have considerable knowledge of the habits of various birds, that the Rose Starling retires to the Ghauts to breed. On visiting those mountains in 1849, I made many inquiries of the hill people, but was unsuccessful in getting any information from them. However, I think it very probable that these birds, after leaving the Deccan in March and April, break up into pairs, and retire to the ravines and forests in the Ghauts to breed. Like the common Starling, these birds congregate in immense flocks before going to roost, and it is a curious sight to watch their movements as they fly in clouds over their night haunts. Towards sunset they begin to collect from the grain-fields, and fly off in detached parties, at first containing only a few individuals. These soon amalgamate, and form large masses, which, as they dash, now upwards and now downwards, now in circles, at one time almost disappear, at another look like a rapidly passing cloud. As soon as the sun is down, they retire to the babool brakes that clothe the banks of the streams and rivers. These birds collect in such numbers on the small bushes and trees on the outskirts of the grain-fields, as to make them appear as if loaded with rich, rosy blossoms, and to make one wonder that the tree is not broken down with their weight.

Family Fringillidæ.

Subfamily Coccothraustinæ, Swain.

Genus Euplectes, Swain.

Euplectes (Bengalensis?).

I forwarded a paper on the nidification, habits, &c. of this little bird, together with specimens of the skins, nests and eggs, in the year 1852. The paper was read, and the specimens exhibited at the meeting of the Society on July 27th, 1852. Repetition therefore is needless.

Genus Amadina, Swain.

Subgenus Spermestes.

Spermestes Cheet, Sykes.

This is a very common little bird, living in flocks, to be found in hedges and low bushes, and is, I believe, partial to those of the leafless Caper. It breeds, I conclude, twice in the year, as I have found its nest in the months of November and March. The nest in two

instances was formed of the flower-stems of the silk-grass, which is abundant in the beds of streams; it was lined with feathers and the silky seeds of the grass; its shape was that of a hollow ball. The largest number of eggs I have found was six, but I see that Col. Sykes found as many as ten. The eggs are very small and of a pure white colour, rather more than $\frac{6}{10}$ths of an inch long by $\frac{5}{10}$ths of an inch wide. These little birds are often to be seen on the ground picking up grass-seeds, and so close together that several may be killed at a shot: they do not take long flights, but merely from bush to bush. I saw numbers of them in the leafless Caper on the banks of the river Bheema.

Subfamily Fringillinæ.

Genus Pyrgita, Swain.

Pyrgita domestica. House-sparrow.

Common enough in India. It breeds during the monsoon. I saw them building in the month of August, and its habits, mode of building its nest, &c., are similar to those of the Sparrow at home.

Pyrgita flavicollis, Frankl. Yellow-necked Sparrow.

Of the time of breeding or nesting habits I know nothing, but Dr. Jerdon in his Catalogue says, "It is said to breed in holes of trees. The egg is of a greenish-white, much streaked and blotched with purple-brown: I obtained one from the body of a female."

Genus Emberiza.

Emberiza melanocephala, Jerdon.

This handsome Bunting is very common in the Deccan when the grain crops are becoming ripe. The Patel or headman of the town of Jintee, near the river Bheema in the Deccan, assured me that these birds, or some of them, remain to breed in the thick babool copses that clothe the banks of the river near that town, but I did not obtain the nests or eggs. I believe that the greater part migrate much about the same time as the Rose-coloured Pastor.

Subfamily Alaudinæ.

Genus Alauda.

Alauda deva, Sykes.

I have some eggs which I believe to be those of this lark, though on account of the similarity of the two or three species that inhabit the Deccan it is very difficult to state this positively. I obtained the eggs on the 11th of September; the nest was composed of a few stems of grass collected together, and forming a very slight receptacle for the eggs. Birds of this species breed twice during the year; I have obtained their eggs during the months of May, September, and October. They lay but two eggs, of a pale mottled brown colour, with a band of the same round the larger end; they are rather more than $\frac{7}{10}$ths of an inch long by nearly $\frac{6}{10}$ths of an inch wide.